Space Weather Forecast

Issued on Monday, 28 February 2022 at 00:26 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight chance of R1/Minor radio blackouts. Slight chance of G1/Minor Storm, increasing Day 4 (03 Mar).

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity was Low in the last 24 hours with a small Common-class flare observed at 27/0626 UTC, from a region in the southeast of the visible disc. There are currently four sunspot regions on the visible disc, all of which are small and simple at the present time. The two regions in the eastern hemisphere have been developing however and will be monitored for any further growth.
No Earth-directed Coronal Mass Ejections (CMEs) were observed in the available imagery during the past 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind showed the arrival of and transition into a fast wind from a coronal hole. There are three coronal holes in the western hemisphere so the exact source is uncertain. Wind speed was initially at background levels, near 350 km/s, and increased through the period to reach around 500 km/s. The Interplanetary Magnetic Field was weak initially, increasing to Moderate levels, before declining slightly. The north-south component varied weakly at first however around 27/0630 UTC there was a brief fall to moderate southerly values, before varying more weakly again. Resultant geomagnetic activity was Quiet to Unsettled (Kp 0-3) with an Active (Kp 4) interval between 27/0600-0900 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is currently at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is forecast to be low or very low, with a chance of further Common-class flares. There is just a slight chance of Moderate-class flares. This may increase slightly in the coming days, with a couple of potential regions rotating on in 2-3 days time.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs are currently forecast. A series of coronal hole fast wind connections are expected during this period, with winds likely to exceed 500 km/s at times. Geomagnetic activity is expected to be Quiet to Active, with a very slight chance of G1/Minor Storm intervals. This declining to mainly Quiet during Day 3. We may see a further coronal hole fast wind later on Day 4, this is more likely to give G1/Minor Storm periods, although the timing is currently uncertain.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to remain at background, with no solar radiation storms expected through the period.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	5	1	40
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	5	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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